

IN THE CLAIMS

17
1. (Currently Amended) An optical recording medium ~~for use in a near field~~
condition comprising:

a substrate;

~~a light reflecting layer directly formed on said substrate;~~

a recording layer formed on the ~~light reflecting layer~~ substrate;

a first protective layer formed on the recording layer; and

a transparent heat radiating layer formed on the first protective layer so as to disperse
heat from the recording layer, wherein

the recording layer is exposed to light via a side at which the transparent heat
radiating layer is positioned to thereby perform at least one of recording and [reproduction of]
reproducing information, and

~~the light reflecting layer reflects the light focused on the optical recording medium
and disperses heat from the recording layer.~~

2-4. (Cancelled)

5. (Previously Amended) An optical recording medium as set forth in claim 1,
wherein the transparent heat radiating layer has a higher heat conductivity than the first
protective layer.

6. (Previously Amended) An optical recording medium as set forth in claim 5,
wherein the transparent heat radiating layer has a heat conductivity of about 0.1 (W/cm·K) or
more.

7. (Currently Amended) An optical recording medium as set forth in claim 6, wherein the transparent heat radiating layer has a quenching coefficient, with respect to the light used for recording and reproducing, of less than about 0.1.

8. (Currently Amended) An optical recording medium as set forth in claim 7, wherein the transparent heat radiating layer comprises at least one of BN, AlN, SiN, SiC, Ta₂O₅, and ~~diamond-state~~ diamond-like carbon.

9. (Currently Amended) An optical recording medium as set forth in claim 1, wherein the transparent heat radiating layer is a multi-layer film comprising a plurality of layers stacked together, having substantially same optical constants and having different heat constants.

10. (Previously Amended) An optical recording medium as set forth in claim 1, further comprising a layer reflecting light including metal or semimetal, wherein the layer reflecting light is formed between the substrate and the recording layer.

11. (Previously Amended) An optical recording medium as set forth in claim 1, further comprising an antireflection layer formed on the transparent heat radiating layer.

12. (Previously Amended) An optical recording medium as set forth in claim 1, further comprising an antireflection layer between the transparent heat radiating layer and the recording layer.

13. (Original) An optical recording medium as set forth in claim 1, further comprising a second protective layer between the substrate and the recording layer.

14. (Previously Amended) An optical recording medium as set forth in claim 1, wherein the recording layer comprises a material undergoing a phase change and a complex index of refraction of the recording layer changes under said light.

15. (Previously Amended) An optical recording medium as set forth in claim 1, wherein the recording layer comprises a material having a magnetization state changeable under an action of said light into a polarized state.

16. (Previously Amended) An optical recording medium as set forth in claim 1, wherein the recording layer comprises an organic dye material having a complex index of refraction that changes under said light with respect to a wavelength of the reproducing light.

17. (Currently Amended) An optical recording and reproduction device comprising:
a head having a light source;
an optical recording medium; and
an optical system focusing light from the light source to the optical recording medium
~~in a near field condition~~, wherein
the optical recording medium comprises,

a substrate,

~~a light reflecting layer directly formed on said substrate,~~

a recording layer formed on the ~~light reflecting layer~~ substrate,

a first protective layer formed on the recording layer, and

a transparent heat radiating layer ~~positioned towards the head and~~ formed on the first protective layer so as to disperse heat from the recording layer, wherein

the recording layer is exposed to the light via a side at which the transparent heat radiating layer is formed to thereby perform at least one of recording and reproducing [of] information, ~~and~~

~~the light reflecting layer reflects the light focused on the optical recording medium and disperses heat from the recording layer.~~

18. (Cancelled)

19. (Previously Amended) An optical recording and reproduction device as set forth in claim 17, wherein a length between the transparent heat radiating layer and the optical system is about 200 nm or less.

20. (Previously Amended) An optical recording and reproduction device as set forth in claim 19, wherein the optical system comprises a solid immersion lens.

21. (Previously Amended) An optical recording and reproduction device as set forth in claim 17, wherein the transparent heat radiating layer has a higher heat conductivity than the first protective layer.

22. (Previously Amended) An optical recording and reproduction device as set forth in claim 21, wherein the transparent heat radiating layer has a heat conductivity of about 0.1 (W/cm·K) or more.

23. (Previously Amended) An optical recording and reproduction device as set forth in claim 22, wherein the transparent heat radiating layer has a quenching coefficient, with respect to the light used for recording and reproducing, of less than about 0.1.

24. (Currently Amended) An optical recording and reproduction device as set forth in claim 23, wherein the transparent heat radiating layer comprises at least one of BN, AlN, SiN, SiC, Ta₂O₅, and ~~diamond-state~~ diamond-like carbon.

25. (Currently Amended) An optical recording and reproduction device as set forth in claim 17, wherein the transparent heat radiating layer is a multi-layer film comprising a plurality of layers stacked together, having substantially same optical constants and having different heat constants.

26. (Currently Amended) An optical recording and reproduction device as set forth in claim 17, comprising a layer reflecting the light including metal or semimetal, wherein the layer reflecting the light is formed between the substrate and the recording layer.

27. (Previously Amended) An optical recording and reproduction device as set forth in claim 17, wherein said optical recording medium further comprises an antireflection layer on the transparent heat radiating layer.

28. (Previously Amended) An optical recording and reproduction device as set forth in claim 17, wherein said optical recording medium further comprises an antireflection layer between the transparent heat radiating layer and the recording layer.

29. (Original) An optical recording and reproduction device as set forth in claim 17, wherein said optical recording medium further comprises a second protective layer between the substrate and the recording layer.

30. (Previously Amended) An optical recording and reproduction device as set forth in claim 17, wherein the recording layer comprises a material having a magnetization state changeable under said light into a polarized state.

31. (Previously Amended) An optical recording and reproduction device as set forth in claim 17, wherein the recording layer comprises an organic dye material having a complex index of refraction that changes under said light with respect to a wavelength of the reproducing light.

32. (Currently Amended) An optical recording and reproduction device comprising:
a ~~head having a~~ light source;
an optical recording medium; and
an optical system focusing light from the light source to the optical recording medium ~~in a near field condition~~, wherein

the optical recording medium comprises,
a substrate,
a phase change recording layer formed on the ~~light reflecting layer~~ substrate
and comprising a material undergoing a phase change under said focusing of light,
a first protective layer formed on the phase change recording layer, and
a transparent heat radiating layer ~~positioned towards the head and~~ formed on
the first protective layer so as to disperse heat from the phase change recording layer, wherein

the phase change recording layer is exposed to light via a side at which the transparent heat radiating layer is formed to thereby perform at least one of recording and reproducing [of] information, and

~~the light reflecting layer reflects the light focused on the optical recording medium and disperses heat from the recording layer.~~

33. (Cancelled)

34. (Previously Amended) An optical recording and reproduction device as set forth in claim 32, wherein a length between the transparent heat radiating layer and the optical system is about 200 nm or less.

35. (Currently Amended) An optical recording ~~medium~~ and reproduction device as set forth in claim 34, wherein the optical system comprises a solid immersion lens.

36. (Previously Amended) An optical recording and reproduction device as set forth in claim 32, wherein the transparent heat radiating layer has a higher heat conductivity than the first protective layer.

37. (Previously Amended) An optical recording and reproduction device as set forth in claim 36, wherein the transparent heat radiating layer has a heat conductivity of about 0.1 (W/cm·K) or more.

38. (Currently Amended) An optical recording and reproduction device as set forth in claim 37, wherein the transparent heat radiating layer has a quenching coefficient, with respect to the light used for recording and reproducing, of less than about 0.1.

39. (Currently Amended) An optical recording and reproduction device as set forth in claim 38, wherein the transparent heat radiating layer comprises at least one of BN, AlN, SiN, SiC, Ta₂O₅, and ~~diamond-state~~ diamond-like carbon.

40. (Currently Amended) An optical recording and reproduction device as set forth in claim 32, wherein the transparent heat radiating layer is a multi-layer film comprising a plurality of layers stacked together, having substantially same optical constants and having different heat constants.

41. (Currently Amended) An optical recording and reproduction device as set forth in claim 32, comprising a light reflecting layer including metal or semimetal, wherein the light reflecting layer is formed between the substrate and the ~~phase-change~~ recording layer.

42. (Previously Amended) An optical recording and reproduction device as set forth in claim 32, wherein said optical recording medium further comprises an antireflection layer on the transparent heat radiating layer.

43. (Previously Amended) An optical recording and reproduction device as set forth in claim 32, wherein said optical recording medium further comprises an antireflection layer between the transparent heat radiating layer and the recording layer.

44. (Original) An optical recording and reproduction device as set forth in claim 32, wherein said optical recording medium further comprises a second protective layer between the substrate and the recording layer.

45. (Currently Amended) An optical recording and reproduction device comprising:
a ~~head having a~~ light source;
an optical recording medium; and
an optical system focusing light from the light source to the optical recording medium in a ~~near field condition~~, wherein

the optical recording medium comprises,

a substrate,

a ~~light reflecting layer directly~~ recording layer formed on said substrate,

a ~~recording layer formed on the light reflecting layer~~,

a first protective layer formed on the recording layer, and

a transparent heat radiating layer formed on the first protective layer so as to disperse heat from the recording layer, wherein

✓ the light is focused from the optical system comprising a near field with a numerical aperture more than 1 to the recording layer via a side at which the transparent heat radiating layer is formed for at least one of recording and reproducing information, ~~and~~

~~the light reflecting layer reflects the light focused on the optical recording medium and disperses heat from the recording layer.~~

46. (Previously Amended) An optical recording medium as set forth in claim 45, wherein the optical system comprises a solid immersion lens.

47. (Previously Amended) An optical recording and reproduction device as set forth in claim 45, wherein the transparent heat radiating layer has a higher heat conductivity than the first protective layer.

48. (Previously Amended) An optical recording and reproduction device as set forth in claim 47, wherein the transparent heat radiating layer has a heat conductivity of about 0.1 (W/cm·K) or more.

49. (Currently Amended) An optical recording and reproduction device as set forth in claim 48, wherein the transparent heat radiating layer has a quenching coefficient, with respect to the light used for recording and reproducing, of less than about 0.1.

50. (Currently Amended) An optical recording and reproduction device as set forth in claim 49, wherein the transparent heat radiating layer comprises at least one of BN, AlN, SiN, SiC, Ta₂O₅, and ~~diamond-state~~ diamond-like carbon.

51. (Currently Amended) An optical recording and reproduction device as set forth in claim 45, wherein the transparent heat radiating layer is a multi-layer film comprising a plurality of layers stacked together, having substantially same optical constants and having different heat constants.

52. (Previously Amended) An optical recording and reproduction device as set forth in claim 45, comprising a layer reflecting light, including metal or semimetal, wherein the layer reflecting light is formed between the substrate and the recording layer.

53. (Previously Amended) An optical recording and reproduction device as set forth in claim 45, wherein said optical recording medium further comprises an antireflection layer on the transparent heat radiating layer.

54. (Previously Amended) An optical recording and reproduction device as set forth in claim 45, wherein said optical recording medium further comprises an antireflection layer between the transparent heat radiating layer and the recording layer.

55. (Original) An optical recording and reproduction device as set forth in claim 45, wherein said optical recording medium further comprises a second protective layer between the substrate and the recording layer.

56. (Previously Amended) An optical recording and reproduction device as set forth in claim 45, wherein the recording layer comprises a material undergoing a phase change and a complex index of refraction of the material changes under said light.

57. (Previously Amended) An optical recording and reproduction device as set forth in claim 45, wherein the recording layer comprises a material having a magnetization state changeable under the action of said light into a polarized state.

58. (Currently Amended) An optical recording and reproduction device as set forth in claim 45, wherein the recording layer comprises an organic dye material having a complex index of refraction that changes under said light with respect to a wavelength of a reproducing light.